

## **CHAPTER 7: ENVIRONMENTAL COMPLIANCE AND INADVERTENT RELEASES**

### **7.1 LAWS, REGULATIONS, AND PERMITS**

The Lawrence Livermore National Laboratory (LLNL) must comply with all applicable Federal, state, and local environmental laws and regulations implemented by a variety of agencies including the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, California Department of Toxic Substances Control (DTSC), California Department of Fish and Game, regional water quality control boards, local air pollution control districts, county health departments, and the city of Livermore Water Reclamation Plant (LWRP). Table 7.1–1 lists the laws and regulations related to these and other regulatory agencies. LLNL performs numerous activities to comply with these environmental laws and regulations as well as internal requirements and applicable U.S. Department of Energy (DOE) orders.

The Environmental Protection Department of LLNL conducts programs to assess compliance with applicable environmental regulations and to estimate the impacts of operations on the environment, including the effectiveness of effluent control measures. The results of these internal monitoring programs are reported annually to the National Nuclear Security Administration and other appropriate Federal, state, and local regulatory agencies. The results are published and available to the general public in LLNL's annual environmental reports.

Environmental analysts from the Environmental Protection Department assist LLNL program staff in implementing environmental requirements and maintaining compliance with regulations. They do so by communicating and working closely with program staff and by keeping informed of existing and planned activities, reviewing construction and environment, safety, and health documents, inspecting facilities, and auditing waste management procedures.

LLNL conducts facility inspections to scrutinize proper handling and management of hazardous and radioactive wastes, as well as other critical aspects of waste generation and handling, in an effort to minimize environmental impacts. Trained personnel investigate, sample, and evaluate all potentially hazardous spills and leaks to the environment. After clean-up operations are conducted, the affected areas are sampled to verify that cleanup has been successful. All spills, leaks, and releases that are required to be reported are detailed in reports sent to the appropriate regulatory agencies. Table 7.1–2 lists the permits held by LLNL for both the Livermore Site and Site 300 for 2002.

**TABLE 7.1–1.—Selected Federal and State Environmental Laws and Regulations with Permit Approval, Consultation, and Notification Requirements**

<b>General</b>			
<b>Law or Regulation</b>	<b>Citation</b>	<b>Responsible Agency</b>	<b>DOE/NNSA Responsibilities</b>
<i>Atomic Energy Act of 1954</i>	42 U.S.C. §2011	DOE	NNSA shall follow its own standards and procedures to ensure the safe operation of its facilities.
NEPA	42 U.S.C. §4321 et seq.	CEQ	Establishes requirements for environmental impact statements. Statutory requirements for preparation of EISs apply to all major Federal actions significantly affecting the environment. NNSA shall comply with NEPA implementing procedures in accordance with 10 CFR Part 1021.
Regulations for Implementing the Procedural Provisions of NEPA	40 CFR Parts 1500-1508	CEQ	These regulations seek to integrate the NEPA process into the early planning phase of a project to insure appropriate consideration of NEPA policies and to eliminate delays, emphasize cooperative consultation among agencies before the environmental document is prepared, identify at an early stage the significant environmental issues deserving of study, provide a mechanism for putting appropriate time limits on the environmental documentation process, and provide for public participation in the NEPA process.
NEPA Implementing Procedures	10 CFR Part 1021	DOE	DOE established its NEPA implementing procedures to meet the requirements of Section 102(2)(c) of NEPA, CEQ implementing regulations, and EO 11514, Protection and Enhancement of Environmental Quality (35 FR 4247). DOE's implementing procedures formalize DOE's policy to follow the letter and spirit of NEPA, comply fully with the CEQ regulations, and apply the NEPA review process early in the planning stages for DOE proposals. The Site-wide Environmental Impact Statement is being prepared under 10 CFR §§1021.330, programmatic (including site-wide) NEPA documents, requiring preparation of site-wide environmental documentation for certain of its large, multiple-facility sites.
EO 11514: Protection and Enhancement of Environmental Quality	3 CFR Parts 1966 – 1970 Comp., p. 902	CEQ	Requires Federal agencies to demonstrate leadership in achieving the environmental quality goals of NEPA; provides for DOE consultation with appropriate Federal, state, and local agencies in carrying out their activities as they affect the environment.

**TABLE 7.1–1.—Selected Federal and State Environmental Laws and Regulations with Permit Approval, Consultation, and Notification Requirements (continued)**

Law or Regulation	Citation	Responsible Agency	DOE Responsibilities
<b>Ecology</b>			
<i>Fish and Wildlife Coordination Act</i>	16 U.S.C. §661 et seq.	USFWS	Requires consultation on the possible effects on wildlife if there is construction, modification, or control of bodies of water in excess of 10 acres in surface area.
<i>Bald and Golden Eagle Protection Act</i>	16 U.S.C. §668 et seq.	USFWS	Consultations should be conducted to determine if any protected birds are found to inhabit the area. If so, DOE must obtain a permit prior to moving any nests due to mission requirements.
<i>Migratory Bird Treaty Act</i>	16 U.S.C. §703 et seq.	USFWS	Requires consultation to determine if there are any impacts on migratory bird populations due to mission requirements. If so, DOE will develop mitigation measures to avoid adverse effects.
<i>Endangered Species Act of 1973</i>	16 U.S.C. §1531 et seq.	USFWS/National Marine Fisheries Service	Requires consultation to identify endangered or threatened species and their habitats, assess DOE impacts thereon, obtain necessary biological opinions, and, if necessary, develop mitigation measures to reduce or eliminate adverse effects of construction or operation.
<i>California Endangered Species Act</i>	Fish and Game Code §2050 et seq.	CDFG	The <i>California Endangered Species Act</i> generally parallels the main provisions of the Federal <i>Endangered Species Act</i> . Under the <i>California Endangered Species Act</i> , the term “endangered species” is defined as a species of plant, fish, or wildlife that is “in serious danger of becoming extinct throughout all, or a significant portion of its range” and is limited to species or subspecies native to California. The Act prohibits the “taking” of listed species except as otherwise provided in state law. Unlike its Federal counterpart, the Act applies the take prohibitions to species petitioned for listing (state candidates).
<i>Natural Community Conservation Planning Act</i>	Fish and Game Code §2800 et seq.	CDFG	The NCCP program of the CDFG is an effort by the State of California and numerous private and public partners to take a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity. The goal of NCCP programs is to identify and provide for the regional or area-wide protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. The NCCP program applies statewide, although there is currently no NCCP region near LLNL.

**TABLE 7.1–1.—Selected Federal and State Environmental Laws and Regulations with Permit Approval, Consultation, and Notification Requirements (continued)**

Law or Regulation	Citation	Responsible Agency	DOE Responsibilities
<b>Air Quality</b>			
Air Pollution Control Rules and Regulations	N/A	BAAQMD, jurisdiction includes Alameda County. SJVUAPCD jurisdiction includes San Joaquin County.  Oversight agencies include both CalEPA Air Resources Board and U.S. EPA	Establishes requirements for the control of air pollutants from stationary (nonmobile) sources, including permit requirements and prohibitory rules associated with activities or equipment with the potential to emit air pollutants. Includes requirements for the control of criteria, toxic and hazardous air pollutants, which are at least as stringent as applicable Federal and state requirements. Source-specific requirements are incorporated into enforceable permit conditions. Establishes air district authority and responsibility to routinely inspect and enforce applicable regulations.
<b>Water</b>			
<i>Clean Water Act</i>	33 U.S.C. §1251 et seq.	EPA	Requires EPA- or state-issued permits and compliance with provisions of permits regarding discharge of effluents to surface waters.
<i>Safe Drinking Water Act</i> (SDWA) of 1944, as amended	42 U.S.C. §300f	EPA	The <i>Safe Drinking Water Act</i> sets national standards for contaminant levels in public drinking water systems, regulates the use of underground injection wells, and prescribes standards for groundwater aquifers that are a sole source of drinking water. The Act applies to Federal facilities that own or operate a public water system. A public water system is defined as a system for the provision of piped water for human consumption that has at least 15 service connections or regularly serves at least 25 individuals. LLNL provides drinking water to its employees. LLNL is required to monitor drinking water quality for organic and inorganic compounds, radionuclides, metals, turbidity, and total coliform bacteria.
<i>Porter-Cologne Water Quality Control Act</i>	California Water Code, Division 7, §13000 et seq.	State Water Resources Control Board	The <i>Porter-Cologne Act</i> gives jurisdiction of water rights to the State Water Resources Control Board. Nine Regional Water Quality Control Boards manage water quality within their regions. The regional boards determine beneficial uses of water for bodies of water in their areas, establish and enforce water quality standards for both surface and groundwater, and take actions to maintain standards by controlling pollution sources.
NPDES Stormwater Permit	33 U.S.C. §1342	State Water Resources Control Board/Central Valley Regional Water Quality Control Board/San Francisco Bay Regional Water	The NPDES Stormwater Program requires operators of construction sites, industrial facilities, and municipal separate storm sewer systems to obtain authorization to discharge stormwater under an appropriate NPDES permit for construction, industrial, or municipal operations. Federal facilities have been defined by regulation to be a municipal separate storm sewer system. The NPDES program at the Livermore Site is enforced by the State Water Resources Control Board; at Site 300, it is enforced by the Central Valley Regional Water Quality Control Board.

**TABLE 7.1–1.—Selected Federal and State Environmental Laws and Regulations with Permit Approval, Consultation, and Notification Requirements (continued)**

Law or Regulation	Citation	Responsible Agency	DOE Responsibilities
		Quality Control Board	
Dredged or Fill Material (Section 404 of the <i>Clean Water Act</i> )/ <i>Rivers and Harbors Appropriations Act</i> of 1899	33 U.S.C. §1344/33 U.S.C. §401 et seq.	U.S. Army Corps of Engineers	Requires permits to authorize the discharge of dredged or fill material into navigable waters or wetlands and to authorize certain structures or work in or affecting navigable waters.
Compliance with Floodplain/ Wetlands Environmental Review Requirements	10 CFR Part 1022	DOE	Requires DOE to comply with all applicable floodplain/wetlands environmental review requirements.
<b>Noise</b>			
East (Alameda) County Area Plan (Alameda County 1994)	Alameda County General Code, Title 6 Health and Safety, Chapter 6.60 Noise	Alameda County	Sets limits on the allowable amount of noise (maximum decibels) that can be heard from one property to another to protect certain noise-sensitive land uses.
City of Livermore General Plan (City of Livermore 1975)	Chapter 9: Noise Element	City of Livermore	Provides acceptable noise levels for certain land uses, based on state guidelines.
City of Tracy Noise Control Ordinance	Tracy Municipal Code, Section 4.12.750 – 840	City of Tracy	Provides explicit noise level limits for various zoning types and provides methods for addressing noise problems.
San Joaquin County Code	Development Title, Subsection 9-1025-9 Noise	San Joaquin County	Stipulates maximum allowable noise exposure levels associated with proposed activities.
Self-Imposed Limit on Impulse Noise	NA	LLNL	Self-imposed maximum allowable sound pressure level of 126 decibels, not to be exceeded in nearby populated areas. At Site 300, for open air detonations LLNL uses “blast forecasting” to determine the maximum explosive weight that can be detonated without an irritant effect on the nearby populated areas.

**TABLE 7.1–1.—Selected Federal and State Environmental Laws and Regulations with Permit Approval, Consultation, and Notification Requirements (continued)**

Law or Regulation	Citation	Responsible Agency	DOE Responsibilities
<b>Traffic and Transportation</b>			
<i>Hazardous Materials Transportation Act</i>	49 U.S.C. §1501 et seq.	DOT	DOE shall comply with the requirements governing hazardous materials and waste transportation.
<i>Hazardous Materials Transportation Uniform Safety Act of 1990</i>	49 U.S.C. §1501	DOT	Restricts shippers of highway route-controlled quantities of radioactive materials to use only permitted carriers.
<b>Materials and Waste Management</b>			
TSCA	15 U.S.C. §2601 et seq.	EPA	DOE shall comply with inventory reporting requirements and chemical control provisions of TSCA to protect the public from the risks of exposure to chemicals; TSCA imposes strict limitations on use and disposal of polychlorinated biphenyl-contaminated equipment.
<i>Emergency Planning and Community Right-To-Know Act of 1986</i>	42 U.S.C. §11001 et seq.	EPA	Requires the development of emergency response plans and reporting requirements for chemical spills and other emergency releases, and imposes right-to-know reporting requirements covering storage and use of chemicals that are reported in toxic chemical release forms.
<i>Pollution Prevention Act of 1990</i>	42 U.S.C. §§11001 – 11050	EPA	Establishes a national policy that pollution should be reduced at the source and requires a toxic chemical source reduction and recycling report for an owner or operator of a facility required to file an annual toxic chemical release form under section 313 of the SARA.
<i>Nuclear Waste Policy Act of 1982</i>	42 U.S.C. §10101 et seq.	EPA	DOE shall dispose of radioactive waste per standards of 40 CFR Part 191.
<i>Federal Facility Compliance Act of 1992</i>	42 U.S.C. §6961	Department of Toxic Substances Control	Eliminates <i>Resource Conservation and Recovery Act</i> waiver of sovereign immunity for Federal facilities and requires DOE to develop plans and enter into agreements with states as to specific management actions for specific mixed waste streams.
RCRA/ Hazardous and Solid Waste Amendments of 1984	42 U.S.C. §6901 et seq./Public Law (PL) 98- 616	EPA	Requires proper management and, in some cases, permits for current operations involving hazardous waste and remediation of contamination from past activities (not addressed by the <i>Comprehensive Environmental Response, Compensation, and Liability Act</i> ); changes to site hazardous waste operations could require amendments to <i>Resource Conservation and Recovery Act</i> hazardous waste permits involving public hearings.
<b>Site Contamination and Remediation</b>			
CERCLA/ SARA	42 U.S.C. §9601 et seq./PL 99- 499	EPA	Requires cleanup and notification if there is a release or threatened release of a hazardous substance; requires DOE to pursue interagency agreements with EPA and state to control the cleanup of each DOE site on the National Priorities List.
<i>Community Environmental Response Facilitation</i>	PL 102-426	EPA	Amends <i>Comprehensive Environmental Response, Compensation, and Liability Act</i> (40 CFR Part 300) to establish a process for identifying, prior to the termination of Federal activities, property that does not contain contamination. Requires prompt identification

**TABLE 7.1–1.—Selected Federal and State Environmental Laws and Regulations with Permit Approval, Consultation, and Notification Requirements (continued)**

Law or Regulation	Citation	Responsible Agency	DOE Responsibilities
<i>Act</i>			of parcels that will not require remediation to facilitate the transfer of such property for economic redevelopment purposes.
<i>California Hazardous Waste Control Law and other California hazardous waste laws</i>	Health and Safety Code, Division 20, Chapter 6.5 California Code of Regulations, Title 22	DTSC	Sets requirements for managing hazardous waste in California.

BAAQMD = Bay Area Air Quality Management District; CDFG = California Department of Fish and Game; CEQ = Council on Environmental Quality; CFR = Code of Federal Regulations; DOE = U.S. Department of Energy; DOT = U.S. Department of Transportation; EIS = environmental impact statement; EO = Executive Order; EPA = Environmental Protection Agency; FR = Federal Register; NA = not available; N/A = not applicable; NCCP = Natural Community Conservation Planning; NEPA = *National Environmental Policy Act*; NNSA = National Nuclear Security Administration; NPDES = National Pollution Discharge Elimination System; SJVUAPCD = San Joaquin Valley Unified Air Pollution Control District; PCB = polychlorinated biphenyl; SARA = *Superfund Amendment and Reauthorization Act*; TSCA = *Toxic Substances Control Act*; U.S.C. = United States Code; USFWS = U.S. Fish and Wildlife Service.

**TABLE 7.1–2.—Summary of Permits Active in 2002 <sup>a,b</sup>**

<b>Livermore Site</b>	<b>Site 300</b>
<b>Air</b>	
<p>BAAQMD issued 199 permits for operation of various types of equipment, including boilers, emergency generators, cold cleaners, ultrasonic cleaners, degreasers, printing press operations, manual wipe-cleaning operations, metal machining and finishing operations, silk-screening operations, silk-screen washers, paint spray booths, adhesives operations, image tube fabrication, optic coating operations, storage tanks containing volatile organic compounds in excess of 1.0%, plating tanks, drum crusher, semiconductor operations, diesel air-compressor engines, groundwater air strippers/dryers, material-handling equipment, sewer diversion system, oil and water separator, fire test cells, gasoline dispensing operation, paper-pulverizer system, and firing tanks.</p>	<p>SJVUAPCD issued 44 permits for operation of various types of equipment, including boilers, emergency generators, paint spray booth, groundwater air strippers, soil vapor extraction units, woodworking cyclone, gasoline dispensing operation, explosive waste treatment units, and drying ovens, and the Contained Firing Facility.</p>
<b>Water</b>	
<p>WDR Order No. 88-075 for discharges of treated groundwater from Treatment Facility A to percolation pits and recharge basin.</p> <p>WDR Order No. 95-174, NPDES Permit No. CA0030023 for discharges of stormwater associated with industrial activities and low-threat nonstormwater discharges to surface waters.</p> <p>WDR Order No. 99-08-DWQ, NPDES California General Construction Activity Permit No. CAS000002; Terascale Simulation Facility, Site ID No. 201S317827; Sensitive Compartmented Information Facility, Site ID No. 201S317621; Soil Reuse Project, Site ID No. 2015305529; and National Ignition Facility, Site ID No. 201S306762, for discharges of stormwater associated with construction activities affecting two hectares or more.</p> <p>WDR Order No. 99-086 for the Arroyo Las Positas Maintenance Project.</p> <p>Nationwide Permits 18 and 33 for the Arroyo Las Positas Maintenance Project. One offsite project (at Arroyo Mocho) completed under a streambed alteration agreement.</p> <p>FFA for groundwater investigation/remediation.</p>	<p>WDR Order No. 93-100 for post-closure monitoring requirements for two Class I landfills.</p> <p>WDR Order No. 96-248 for operation of two Class II surface impoundments, a domestic sewage lagoon, and percolation pits.</p> <p>WDR Order No. 97-03-DWQ, NPDES California General Industrial Activity General Permit No. CAS000001 for discharge of stormwater associated with industrial activities.</p> <p>WDR Order No. 97-242, NPDES Permit No. CA0082651 for discharges of treated groundwater from the eastern General Services Area treatment unit.</p> <p>WDR Order No. 5-00-175, NPDES Permit No. CAG995001 for large volume discharges from the drinking water system that reach surface waters.</p> <p>FFA for groundwater investigation/remediation.</p> <p>57 registered Class V injection wells.</p>



**TABLE 7.1–2.—Summary of Permits Active in 2002 <sup>a,b</sup> (continued)**

<b>Livermore Site</b>	<b>Site 300</b>
<b>Hazardous waste</b>	
<p>EPA ID No. CA2890012584.</p> <p>Authorization to mix resin in Unit CE231-1 under conditional exemption tiered permitting.</p> <p>Final Closure Plan submitted to DTSC for the Building 419 interim status unit (February 2001).</p> <p>Authorizations to construct the permitted units of Building 280, Building 695, and additions to Building 693.</p> <p>Authorization under hazardous waste permit to operate 18 waste storage units and 14 waste treatment units.</p> <p>Continued authorization to operate seven waste storage units and eight waste treatment units under interim status. Final Closure Plans submitted to DTSC for the Building 233 and Building 514 interim status units (May 2000).</p> <p>Notified DTSC on 3/31/01 that LLNL will not construct and operate Building 280 as a permitted unit as described in our Hazardous Waste Facility permit.</p>	<p>EPA ID No. CA2890090002.</p> <p>Part B Permit—Container Storage Area (Building 883) and Explosives Waste Storage Facility (issued May 23, 1996).</p> <p>Part B Permit—Explosives Waste Treatment Facility (issued October 9, 1997). Docket HWCA 92/93-031. Closure and Post-Closure Plans for Landfill Pit 6 and the Building 829 Open Burn Facility.</p>
<b>Medical waste</b>	
<p>One permit for large quantity medical waste generation and treatment covering the Biology and Biotechnology Research Program, Health Services Department, Forensic Science Center, Medical Photonics Lab, Tissue Culture Lab, and Chemistry and Materials Science Department.</p>	<p>Limited Quantity Hauling Exemption for small quantity medical waste generator.</p>
<b>Sanitary sewer</b>	
<p>Discharge Permit No. 1250 (2001/2002 and 2002/2003<sup>c</sup>) for discharges of wastewater to the sanitary sewer.</p> <p>Permit 1510G (2001/2002<sup>d</sup>) for discharges of groundwater from CERCLA restoration activities.</p>	
<b>Storage tanks</b>	
<p>Eight operating permits covering 11 underground petroleum product and hazardous waste storage tanks: 111-D1U2 Permit No. 6480; 113-D1U2 Permit No. 6482; 152-D1U2 Permit No. 6496; 271-D2U1 Permit No. 6501; 321-D1U2 Permit No. 6491; 322-R2U2 Permit No. 6504<sup>e</sup>; 365-D1U2 Permit No. 6492; and 611-D1U1, 611-G1U1, 611-G2U1, and 611-O1U1 Permit No. 6505.</p>	<p>One operating permit covering five underground petroleum product tanks assigned individual permit numbers: 871-D1U2 Permit No. 008013; 875-D1U2 Permit No. 006549; 879-D1U1 Permit No. 006785; 879-G3U1 Permit No. 007967; and 882-D1U1 Permit No. 006530</p>

<sup>a</sup> Permit numbers are based on actual permitted units or activities maintained and renewed by LLNL during 2002.

<sup>b</sup> See Acronyms and Abbreviations for list of acronyms.

<sup>c</sup> The Discharge Permit No. 1250 period is from May 15 to May 14; therefore, two permits were active during the 2002 calendar year.

<sup>d</sup> Permit 1510G is a two-year (January to December) permit.

<sup>e</sup> LLNL received permit exemption in October 2002.

## 7.2 LIVERMORE SITE—REGULATORY INSPECTIONS AND AUDITS

Table 7.2–1 summarizes the regulatory agency inspections and audits conducted at the Livermore Site during 2002. Findings resulting from these activities are summarized below and are representative of the type of regulatory oversight that may be expected to continue into the future. Recent inspections have not identified new compliance concerns at the Livermore Site.

**TABLE 7.2–1.—Compliance Summary for 2002, Livermore Site**

Audits/Inspections	Date	Regulatory Agency
Annual inspection of permitted units	February 8, 2002; March 13, 2002; June 6, 2002; September 6, 2002; October 24, 2002	BAAQMD
Annual compliance sampling	October 7-8, 2002	LWRP
Categorical sampling	October 21, 2002	LWRP
Hazardous waste facilities	May 22-24, 30, 2002; June 4, 2002	DTSC
Medical waste	September 25, 2002	ACDEH
Compliance with underground storage tank upgrade requirements and operating permits	October 15-16, 2002	ACDEH

ACDEH = Alameda County Department of Environmental Health; BAAQMD = Bay Area Air Quality Management District; DTSC = Department of Toxic Substances Control; LWRP = Livermore Water Reclamation Plant; SFBRWQCB = San Francisco Bay Regional Water Quality Control Board;

### Air Inspections

The Bay Area Air Quality Management District conducted five inspections at the Livermore Site during 2002. Inspections were conducted to review startup of new equipment and operation of existing equipment with permits. No notices of violation were issued.

### Hazardous Waste Inspections

The DTSC inspected LLNL hazardous waste storage and treatment facilities on May 22 through 24, May 30, and June 4, 2002. On August 21, 2002, LLNL received an inspection report and notification of a Summary of Violations resulting from the May inspection. LLNL received a Summary of Violations from DTSC for alleged violations observed during the 2002 compliance evaluation inspection of permitted hazardous waste handling operations. The alleged violations and resolutions were as follows:

- Storage of one container of waste for greater than 90 days in the B612-4 90-day generator area. This waste container was moved to a permitted storage location.
- Storage of two waste containers for greater than one year in the B693 Container Storage Unit. This waste was transferred to an offsite transfer, storage, and disposal facility.

- Inadequate aisle spacing in the Area 514-3 portable tank area. LLNL maintained that adequate aisle spacing was provided.
- Failure of an individual to take a required refresher training course. LLNL maintained that the individual met the training requirements until he was transferred to a different position where the training was no longer required.

Later, LLNL received notice from DTSC that the agency had rescinded the last two alleged violations. Receiving a Summary of Violations meets the requirements of an Off-Normal Occurrence (OR 2002-0012) (LLNL 2003cb).

### ***Medical Waste***

LLNL is registered with the Alameda County Department of Environmental Health as a generator of medical waste and has a treatment permit. The September 25, 2002, inspection of buildings at Health Services, the Biology and Biotechnology Research Program, and the Medical Photonics Lab did not result in any compliance issues or violations.

### **Tank Inspections**

Inspections of underground storage tanks for upgrade requirements and operating permits were conducted by the Alameda County Department of Environmental Health on October 15-16, 2002; no violations were found.

### **Sewer Discharge Inspections**

Monitoring results for sewer discharges from LLNL are reported monthly to the LWRP. The monitoring results for the LLNL effluent are reported monthly to the LWRP. In 2002, LLNL sanitary effluent monitoring identified five events that were at or slightly above effluent limitations contained in Permit No. 1250. Two of these events resulted in a Letter of Warning from the LWRP. Daily effluent samples collected on August 3 and 6 contained lead at concentrations of 0.226 milligrams per liter and 0.208 milligrams per liter, respectively, exceeding the discharge limit of 0.2 milligrams per liter. The LWRP issued a Letter of Warning dated October 10, 2002, for these discharges. The other three events were brief pH monitoring fluctuations, reported to the LWRP. Following LWRP's evaluation of each event, they decided formal enforcement action was not appropriate.

On October 7 and 8, 2002, LWRP and Environmental Protection Department personnel collected split samples of site effluent as part of routine annual compliance sampling. Sample results confirmed compliance with effluent discharge limits. LLNL and LWRP also inspected and sampled categorical processes and their waste streams on October 21, 2002. No facility deficiencies were noted during any of the inspections LLNL monitors discharges from groundwater treatment facilities to the sanitary sewer under Permit 1510G (2002) as they occur. Data are reported annually to the LWRP. In 2002, LLNL complied with all the terms and conditions of Permit 1510G.

### 7.3 SITE 300—REGULATORY INSPECTIONS AND AUDITS

Table 7.3–1 summarizes the regulatory agency inspections and audits conducted at Site 300 during 2002. Findings resulting from these activities are summarized below and are representative of the types of regulatory oversight that may be expected to continue into the future. The more recent inspections have not identified new compliance concerns at Site 300.

**TABLE 7.3–1.—Compliance Summary for 2002, Site 300**

Audits/Inspections	Date	Regulatory Agency
Emission sources – startup inspection of Contained Firing Facility and Central GSA air stripper	June 4, 2002	SJVUAPCD
Permitted operations	November 11, 2002	CVRWQCB
Permitted hazardous waste and accumulation and generator facilities	November 20-21, 2002	DTSC

CVRWQCB = Central Valley Regional Water Quality Control Board; DTSC = Department of Toxic Substances Control; GSA = General Services Area; SJVUAPCD = San Joaquin Valley Unified Air Pollution Control District.

#### Air Inspections

On June 4, 2002, the San Joaquin Valley Unified Air Pollution Control District conducted an inspection of various operating emission sources and a startup inspection of the Contained Firing Facility and the Central General Services Area air stripper; no discrepancies were found.

#### Hazardous Waste Inspections

On November 20 and 21, DTSC conducted the 2002 compliance evaluation inspection of Site 300 hazardous waste generator areas, Building 883 Waste Accumulation and Container Storage Areas, and Explosives Waste Treatment and Storage Facilities. No violations were found.

#### Water Inspections

The Central Valley Regional Water Quality Control Board inspected the Site 300 permitted facilities in November 2002. No violations were found during these inspections.

### 7.4 SUMMARY OF INADVERTENT EVENTS

Table 7.4–1 summarizes inadvertent events that occurred at LLNL between 1998 and 2002. The information in these tables has been obtained from the unusual occurrence reports that have been reported to DOE by LLNL (LLNL 1999, LLNL 2000g, LLNL 2001v, LLNL 2002cc, LLNL 2003l).

**TABLE 7.4–1.—Lawrence Livermore National Laboratory Inadvertent Events with the Potential for Environmental Impacts**

<b>Date</b>	<b>Material Released</b>	<b>Description of Event</b>	<b>Consequences and/or Actions Taken</b>
November 5, 2002	None	<p>LLNL received a field inspection report from the San Joaquin County Environmental Health Department listing three minor violations:</p> <ul style="list-style-type: none"> <li>• Lack of documentation for tank alarms at Buildings 871, 875, and 879.</li> <li>• Line leak detector at Building 879 was not functioning at the required rate.</li> <li>• Lack of documentation of line leak test or positive turbine pump shutdown due to lack of dispenser pan sensors at Building 879.</li> </ul> <p>To address the observations, LLNL has developed logbooks at the tank system alarm panels and instituted documentation requirements for documenting alarms. In addition, the B879 line leak detector was replaced and the unleaded line system was leak tested and the results submitted to the San Joaquin County Environmental Health Department as requested. Receiving a notice of violation meets the requirements of an Off-Normal Occurrence. OR 2002–0033.</p>	Notice of violation issued.
August 3 and August 6, 2002	Lead	Lead in the August 3 and August 6 daily effluent samples exceeded the permit limit	No worker exposures.
June 6, 2002	None	<p>LLNL received a Summary of Violation from DTSC for alleged violations observed during the 2002 Compliance Evaluation Inspection of permitted hazardous waste handling operations. The alleged violations and resolutions were as follows:</p> <ul style="list-style-type: none"> <li>• Storage of one container of waste for greater than 90 days in the B612-4 90-day generator area. This waste container was moved to a permitted storage location.</li> <li>• Storage of two waste containers for greater than one year in the B693 Container Storage Unit. This waste was transferred to an offsite treatment, storage, and disposal facility.</li> <li>• Inadequate aisle spacing in the Area 514-3 portable tank area. LLNL maintained that adequate aisle spacing was provided.</li> <li>• Failure of an individual to take a required refresher training course. LLNL maintained that the individual met the training requirements until he was transferred to a different position where the training was no longer required.</li> </ul> <p>Later, LLNL received notice from DTSC that the agency had rescinded the last two alleged violations. Receiving a Summary of Violation meets the requirements of an Off-Normal Occurrence.</p>	Notice of violation issued.

**TABLE 7.4–1.—Lawrence Livermore National Laboratory Inadvertent Events with the Potential for Environmental Impacts  
(continued)**

<b>Date</b>	<b>Material Released</b>	<b>Description of Event</b>	<b>Consequences and/or Actions Taken</b>
April 5, 2002	Shell Diala insulating oil	LLNL was notified by a scrap metal company on April 4 that equipment (a pulse-electron beam generator) shipped to them by LLNL that day contained a large volume of liquid. Before shipping the equipment, LLNL removed approximately 3,000 gallons of Shell Diala insulating oil from the equipment. Upon receiving the equipment, the scrap metal company discovered that additional liquid was contained in a separate reservoir. Representatives from LLNL were sent to the scrap metal facility with a container truck to remove the remaining liquid. LLNL removed 2,766 gallons of Shell Diala insulating oil from the equipment and shipped the oil to an outside company for recycling. Equipment containing liquid violates the definition of “scrap metal” as defined in California Code of Regulations, Title 22. Shipping scrap metal containing Shell Diala insulating oil violated the offsite facility acceptance criteria and meets the definition of an Off-Normal Occurrence.	No worker exposures.
September 12, 2001	None	LLNL received a SOV from the DTSC for findings observed during the DTSC inspection of the Livermore site on June 20-22. During the DTSC inspection of the Livermore site, the DTSC observed and documented three findings: <ul style="list-style-type: none"> <li>• Storage of hazardous waste for greater than 90 days at a location that was not authorized for storage and hazardous waste by permit, interim status, or variance. (Corrected 4/3/01)</li> <li>• Failure to mark each lab-packed container with the earliest date of acceptance of any original hazardous waste container to be placed into the lab-pack. (Corrected 7/5/01)</li> <li>• Inaccurate storage date in the operating record. (Corrected 7/20/01)</li> </ul> Receiving a SOV meets the requirements of an Off-Normal Occurrence. OR 2001–0037.	Summary of violation issued.
August 15, 2001	None	LLNL received an addendum to an earlier SOV received from the DTSC for findings from the May 17 and May 18 inspection of Site 300. On May 17, the DTSC issued a SOV for failing to keep containers of hazardous waste adequately closed (OR 2001-0018). On August 15, LLNL received an addendum to the SOV, identifying two additional findings from the May 17 and May 18 inspection. The new findings included: <ul style="list-style-type: none"> <li>• Failing to conduct a detailed waste analysis of the spent parts washer waste for waste listed on manifest #99555391</li> <li>• Failing to maintain and provide records, waste analysis, and waste determination for waste streams on manifest #99555390, line 11(c) and #99555391, line 11(a)</li> </ul> Receiving a SOV meets the requirements of an Off-Normal occurrence. OR 2001–0033.	Addendum of SOV issued.
August 1, 2001	Off-Normal	LLNL received a NOV from the LWRP for exceeding the effluent discharge permit limit for lead. Analysis of the daily compliance sample representing May 11 identified lead present at 1.4 mg/L. The LLNL permit limit for lead is 0.20 mg/L. Receiving a NOV meets the requirement of an Off-Normal Occurrence. OR 2001–0029.	Notice of violation issued.

**TABLE 7.4–1.—Lawrence Livermore National Laboratory Inadvertent Events with the Potential for Environmental Impacts  
(continued)**

<b>Date</b>	<b>Material Released</b>	<b>Description of Event</b>	<b>Consequences and/or Actions Taken</b>
May 18, 2001	None	On May 17, 2001, LLNL received a SOV from the DTSC. While conducting an inspection of the Explosives Waste Storage Facility (EWSF) at Site 300, the DTSC inspector noticed that the lock rings on five 55-gallon drums containing solid hazardous waste were not tight. All five drums had the lids in place, the lock rings with bolts installed, and the waste inside the drums was contained in plastic bags; however, the bolts were determined to be not sufficiently tight and therefore the containers were not considered adequately closed. Although the discrepancy was immediately corrected during the inspection, the DTSC issued a formal violation for this discrepancy. Receiving a SOV meets the requirements of an Off-Normal Occurrence. OR 2001–0018.	Summary of violation issued.
May 16, 2001	None	Three potentially contaminated countertops were disposed of before being properly cleared for release. Three potentially contaminated stainless steel countertops from Building 227 were stored in the Building 227 Staging Area. The countertops were painted red to signify that they were potentially contaminated with a hazardous material and not yet cleared for disposal. According to the procedure, potentially contaminated items are painted red. Once the item has been evaluated and determined to be clear for disposal, it is painted green. During activities on the job site, several cleared countertops that were painted green were inadvertently stacked on top of the three red countertops. It is believed that the entire stack of countertops, including the three potentially contaminated countertops, was sent to the landfill. Upon review of the survey data and process knowledge, it was concluded that the items were suitable for free release to the public. This was reported under the Off-Normal category. OR 2001–0017.	Off-normal occurrence reported.
February 22, 2001	None	On February 22 and 23, LLNL reported the release of methyl tertiary-butyl ether (MTBE) at Building 611. In November 2000, an inspector from the Alameda County Health Care Services noted a deficiency during the inspection of the Building 611 gasoline and diesel underground storage tanks. The deficiency noted the absence of gaskets and bolts from the underground tank system man way covers. In addition, the regulator requested that a sample be obtained from water observed in the tank system containment area directly beneath the man way covers. Analytical results from subsequent samples indicated the possible presence of MTBE in the water of 19.0 mg/L. The possible release of MTBE was reported to the Alameda County Department of Health Services and the San Francisco Bay Regional Water Quality Control Board on February 22 and February 23, 2001. Subsequently, it was determined that the MTBE contaminated water was contained within the containment structure surrounding the underground piping and man way covers. While no contaminated water was detected outside the secondary containment, the OR was initiated to address the non-routine notification of any outside agency. This was reported under the Off-Normal category. OR 2001–0007.	Non-routine notification of an outside agency.

**TABLE 7.4–1.—Lawrence Livermore National Laboratory Inadvertent Events with the Potential for Environmental Impacts  
(continued)**

<b>Date</b>	<b>Material Released</b>	<b>Description of Event</b>	<b>Consequences and/or Actions Taken</b>
January 12, 2001	Off-Normal	LLNL received an NOV from the LWRP on January 12, 2001, for exceeding Federal pretreatment categorical effluent limits for the discharge from the Building 321C water jet machine. Analytical results of samples collected on November 2, 2000, from the discharge of the Building 321C water jet machine indicated a chromium concentration of 8.2 mg/L and a nickel concentration of 3.6 mg/L. The chromium and nickel concentrations exceed the applicable Federal pretreatment categorical effluent limits of 1.71 mg/L for chromium and 2.38 mg/L for nickel. The LLNL organization responsible for the water jet operation took prompt action to correct the situation and prevent future occurrences. On February 1, 2001, the LWRP resampled the process and deemed the operation in compliance. Receiving an NOV meets the requirements of an Off-Normal Occurrence. OR 2001–0002.	Notice of violation ordered.
July 31, 2000	Off-Normal	LLNL received a NOV from the LWRP. The NOV was issued because LLNL exceeded its permit limit for silver on June 26, 2000. Analysis of the daily compliance sample for June 26 indicated silver at 0.31 mg/L; LLNL's permit limit is 0.20 mg/L. Receiving a NOV meets the requirements of an Off-Normal Occurrence. OR 2000–0053.	Notice of violation issued.
July 27, 2000	None	On July 27, 2000, DTSC issued LLNL a SOV. The SOV was a result of a CEI conducted by DTSC on July 12, 2000. The SOV was issued for failure to provide all required training to new personnel within six months of the date hired. Receiving a SOV meets the requirements of an Off-Normal Occurrence. OR 2000–0050.	Summary of violation reported.
June 30, 2000	None	On June 20, 2000, an empty container used to store low-level waste was surveyed for radioactivity. This survey was conducted for the purpose of releasing the container from Building 332 for disposal. The container had been unused and was in storage for approximately 5 years. The survey detected the presence of a radioactive isotope at approximately 800 cpm alpha activity. This incident was reported under the Facility Category D: loss of Radioactive Material/Spread of Radioactive Contamination as an Off-Normal Occurrence. OR 2000–0044.	Off-normal occurrence reported.
June 12, 2000	Potential Phosphorous Trichloride Release	On June 1, 2000, an HWM technician was verifying the contents of a 55-gallon drum containing four carboys at the 883 Waste Accumulation Area. While the technician was visually inspecting the drum, the drum lid popped up and flipped over. Pressure and a visible light grey cloud escaped from the drum. The waste in the drum resulted from synthesis work with phosphorus trichloride. This was reported under the Off-Normal category. OR 2000–0035.	Off-normal occurrence reported.
April 26, 2000	None	LLNL was notified by DTSC of an SOV on April 25. The SOV resulted from a CEI conducted two years earlier on May 26 and 27, and July 7, 1998. Receiving a SOV meets the requirements of an Off-Normal Occurrence. OR 2000–0028.	Summary of violation issued.



**TABLE 7.4–1.—Lawrence Livermore National Laboratory Inadvertent Events with the Potential for Environmental Impacts  
(continued)**

<b>Date</b>	<b>Material Released</b>	<b>Description of Event</b>	<b>Consequences and/or Actions Taken</b>
April 19, 2000	None	LLNL was notified by DTSC of a SOV on April 18. The SOV resulted from a CEI conducted by DTSC on March 20–24. The SOV was issued for : (1) failure to mark the date on a waste container, (2) storage of incompatible wastes, (3) storage of a waste container for more than one year, (4) failure to follow the waste analysis plan, and (5) failure to record required information. Receiving a SOV meets the requirements of a Off-Normal Occurrence. OR 2000–0022.	Summary of violation issued.
March 28, 2000	None	A Hazardous Waste technician was processing laboratory waste from the Biology and Biotechnology Research Program of Building 612 (Hazardous Waste Yard). The waste was labeled > 99% laboratory trash (paper, plastic, and rubber) with 2-mercaptoethanol, phenol and chloroform. The waste bag also contained at least two hypodermic needles that were not listed on the waste label. One of the needles penetrated the bag and stuck the Hazardous Waste technician in the arm. This was reported under the Off-Normal category. OR 2000–0016.	Needle stick.
March 16, 2000	Oil Release	Two oil-filled transformers leaked approximately 55 gallons of oil into a waste container. An estimated 15 gallons of the oil leaked onto the paved area in the salvage yard. It was determined that the amount of oil released did not exceed any reporting limits. However, there was a chance that the oil could have been transported offsite within the container. This was reported under the Off-Normal category. OR 2000–0014.	No worker exposure.
March 13, 2000	Off-Normal	LLNL received a NOV on March 13, 2000, from the LWRP. The NOV was issued because LLNL exceeded the permit limit for cyanide. The January compliance sampling result for cyanide indicated a concentration of 0.051 mg/L in the sanitary effluent. The LLNL limit is 0.04 mg/L. Receiving a NOV meets the requirements of an Off-Normal Occurrence. OR 2000–0012.	Notice of violation issued.

**TABLE 7.4–1.—Lawrence Livermore National Laboratory Inadvertent Events with the Potential for Environmental Impacts  
(continued)**

<b>Date</b>	<b>Material Released</b>	<b>Description of Event</b>	<b>Consequences and/or Actions Taken</b>
September 22, 1999	None	On September 21, 1999, a Hazardous Waste Management contractor employee was preparing hazardous waste for off-site shipment. The contractor was packaging a bottle containing Raney nickel, a solid that is normally suspended in water. After observing that there was no water in the container, the contractor added water to the container, allowed time for gas generation, and then replaced the screw cap. The contents of the container over-pressurized, blowing off the plastic screw cap. Less than 2.5 ounces of the material was discharged to the ceiling of the room and to the contractor's hair and shirt collar. The contractor and the room were decontaminated. There was no release to the environment because all the contents of the bottle were contained in the room. No injuries occurred, and assistance from the Fire Department was not needed. It was determined that this near-miss occurrence resulted from a failure to communicate or follow instructions. A courtesy phone call was made to DTSC informing it that a DOE occurrence report was initiated. Having only one barrier to prevent the release of a hazardous material to the environment meets the requirements of a Near Miss Off-Normal Occurrence. OR 1999–0045.	Near miss off-normal occurrence reported.
August 12, 1999	None	As a result of a regulatory inspection by the DTSC, LLNL was issued a SOV on Aug. 12, 1999. The initial SOV identified four alleged violations. On Dec. 22, 1999, LLNL received a DTSC Inspection Report and NOV, adding 12 alleged violations to the previous four. The alleged violations involved administrative practices, operating record issues, and training deficiencies. No findings involved compromise of public protection. Receiving a SOV/NOV meets the requirements of an Off-Normal Occurrence. OR 1999–0037.	Summary of violation and notice of violation issued.
July 13, 1999	None	Following a regulatory inspection of Site 300 by the DTSC, LLNL was issued a SOV for a training violation. During a review of personnel training records, it was discovered that a HWM <sup>(b)</sup> field technician was two months overdue for SCBA refresher training. Receiving a SOV meets the requirements of an Off-Normal Occurrence. OR 1999–0026.	Summary of violation issued.
February 2, 1999	Dry Explosives	LLNL shipped two 50-lb containers of dry explosives from the Nevada Test Site to the Pantex facility in Texas by commercial carrier. A small amount of the dry explosives (approximately one teaspoon) was released from one of the containers to the bed of the truck carrying the containers. The material was properly cleaned up, and the vehicle was released. The loose explosive material was not capable of detonation but could have contributed to a fire. A release of a hazardous material meets the requirements of an Off-Normal Occurrence. OR 1999–0004.	Off-normal occurrence reported.

**TABLE 7.4–1.—Lawrence Livermore National Laboratory Inadvertent Events with the Potential for Environmental Impacts  
(continued)**

<b>Date</b>	<b>Material Released</b>	<b>Description of Event</b>	<b>Consequences and/or Actions Taken</b>
December 18, 1998	PCB	In October 1998, excavated soil from LLNL's East Traffic Circle was staged on an covered with plastic in the Maintenance and Operations Soil Staging Area. Samples obtained from the soil piles were analyzed for metals, volatiles, PCBs, and radioactivity. Results received from the analytical laboratory indicated PCB contamination in excess of EPA Reportable Quantity. Exceeding the EPA's Reportable Quantity meets the requirement of an Unusual Occurrence. OR 1998–0064.	Unusual occurrence reported.
November 25, 1998	None	LLNL was notified by a TSDF that waste received from LLNL exceeded the facilities radioactivity acceptance criteria of <20 µR. The finding was based on a survey of the waste container indicating an activity level of 26 µR. The container was returned to LLNL for verification and found to contain thorium. Exceeding an offsite facility acceptance criteria meets the requirements of an Off-Normal Occurrence. OR 1998–0063.	Off-normal occurrence reported.
October 21, 1998	None	LLNL received a NOV from the California DTSC during the 1998 Compliance Evaluation inspection of Hazardous Waste Management (HWM) operations. On October 21, 1998, the DTSC <sup>(c)</sup> issued two violations to LLNL/Site 300. One violation was received for failure to provide specific employee training records promptly upon request, and a second violation was received for failing to follow 22 CCR 66270. 42, Permit Modifications at the Request of the Permittee, prior to modifying training plans for the employees working in the Explosive Waste Storage Facility (EWSF) and Building 883. Receiving a NOV meets the requirements of an Off-Normal Occurrence. OR 1998–0059.	Notice of violation issued.
March 18, 1998	Gasoline	On March 17, 1998, a Building 611 motor pool employee observed that the suction pump in the gasoline dispenser housing was leaking and notified his supervisor of the leak on that day. The pump was immediately locked and repairs were ordered. On March 18, the contaminated gravel was excavated and the pump repaired. It is estimated that approximately one gallon of gasoline was released, and that 100% of the released material was recovered. On March 19, the Alameda County Health Care Services Agency was notified of the release by voice mail. A written report was provided to the agency on March 25, 1998. Written notification to a regulatory agency meets the requirements of an Off-Normal Occurrence. OR 1998–0018.	Off-normal occurrence reported.
February 2, 1998	Lead, pH	Under the terms stipulated in our Wastewater Discharge Permit, LLNL reported findings of low pH and lead-bearing materials in 1997. Lead was detected in daily composite samples of the effluent to the LWTP <sup>(c)</sup> on 10/31 (28 mg/L) and 11/1 (25 mg/L). On December 5, 15, 19, and 24, 1997, on-line monitoring equipment detected a period during which the pH was below the permit limit of 5. On February 2, 1998, LLNL received a NOV <sup>(d)</sup> from the LWTP for a violation of the Sanitary Sewer Permit discharge limit for lead and pH. Receiving a NOV meets the requirements of an Off-Normal Occurrence. OR 1998–0008.	Notice of violation issued.

**TABLE 7.4–1.—Lawrence Livermore National Laboratory Inadvertent Events with the Potential for Environmental Impacts  
(continued)**

<b>Date</b>	<b>Material Released</b>	<b>Description of Event</b>	<b>Consequences and/or Actions Taken</b>
February 2, 1998	PH	LLNL was notified on 2-2-98 by a commercial TSDF <sup>(b)</sup> that waste shipped to the facility by LLNL had the incorrect pH identified on the Uniform Hazardous Waste Manifest. The shipping papers listed the waste as having a pH of 3, while the TSDF verification sampling found a pH of 13. A violation of Department of Transportation regulations meets the requirements of an Off-Normal Occurrence. OR 1998–0006.	Off-normal occurrence reported.
January 12, 1998	None	A container of waste shipped to a TSDF contained three aerosol cans that were not listed on the manifest. The hazardous contents of the cans were identified; however, the manifest failed to note the materials were contained in aerosol cans. An error on a waste manifest meets the requirements of an Off-Normal Occurrence under the Transportation Section. OR 1998–0001.	Off-normal occurrence reported.

DTSC = Department of Toxic Substances Control.